Idaho Currents

SCHOOL DISTRICT USES LIFE CYCLE COST ANALYSIS TO SAVE ON PRICE TAG OF ENERGY UPGRADES

By Mike Purcell, Energy Specialist

Emmett School District, already in dire straits trying to keep its buildings operating, has upgraded the heating and ventilating system at one school, added air conditioning, and learned a good lesson about life-cycle cost.

Butte View Elementary used to be heated with a 1960s vintage coal-fired boiler. It was very inexpensive to heat with coal, but the coal dust, manpower needed to shovel the coal by hand, and the safety issues were substantial.

Fires occurred yearly, classroom air handling units had not been working for a while, and the control system was not operating properly. In addition, the maintenance crew was having trouble keeping up with repairs.

The district considered replacing the heating system and adding air conditioning by installing 34 packaged rooftop units. The units were on the low end of the efficiency spectrum, with about 76 percent efficiency for the heating cycles.

Although this type of setup is typical for commercial buildings in Idaho, trying to maintain 34 separate units, even if they were not coal, would be difficult for the maintenance staff. Studies by the Northwest Energy Efficiency Alliance show that rooftop units are rarely installed or serviced properly, resulting in large energy waste.

Among the more obvious energy upgrades at Emmett Junior High (pictured) and Butte View Elementary schools are the windows. Both schools also improved the efficiency of their heating and ventilating systems and lights. *Photo by Mike Purcell*

Life cycle costs

So the district contracted with an energy services company, or ESCO, which uses the energy savings stream from installing new efficient equipment to pay for the financed changes. Typical contracts last from 10-15 years.

The ESCO took a new look at the problem, and then proposed a solution that used four high-efficiency rooftop units, a new natural gas boiler, and a single chiller. The proposal also included variable air volume (VAV) units that would provide some air control in each of the classrooms.

The two scenarios, the 34 rooftop units and the ESCO solution, were computer modeled for energy use and life cycle costs. The original rooftop unit solution would have used about 472,000 kWh (kilowatt hours) of electricity and 29,000 therms of natural gas annually if they were installed and maintained properly. The total cost to run this option over the expected 30-year system life was estimated to be about $2,375,000.

The ESCO solution was calculated to use about 279,000 kWh of electricity (193,000 kWh less than the rooftop units) and 18,000 therms of gas (11,000 therms less) annually. The 30-

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year life-cycle cost was around $1,980,000, a savings of $395,000. That translates into more than $13,000 a year savings for the ESCO solution.

Win-win situation

By applying life-cycle costing techniques, the district realized that the whole cost of the first solution was higher. Even though the 34 rooftop units had lower first-time costs, the cost to run them over their lifetime was much higher.

The district decided to pursue the ESCO solution and make numerous other changes to Butte View Elementary and Emmett Junior High School. Upgrades were made on the heating, air conditioning and ventilation systems, lighting, windows, and restroom fixtures. In all, the price of the project came to $1.7 million.

Even though there were some rough times during the installation process, the district employees are quite satisfied.

Before the Emmett School District made energy upgrades, windows covered most of the walls at Emmett Junior High School. *Photo by Mike Purcell*

"The staff had a hard time understanding limitations during installation, but after we were finished, they were ecstatic," says Mike Johnson, project manager and energy engineer for Siemens Building Technologies.

In addition to getting more comfortable and better operating buildings, the district became a smart consumer through life cycle costing. Johnson attributes that to some important qualities teachers look for in good students.

"Emmett School District has been one of the best districts I've worked with because they were willing to ask questions and listen," Johnson says.

Utilities Learn Details About Energy-Efficient Manufactured Homes

By Bob Minter, Senior Energy Specialist

Utility representatives were updated on the manufactured home industry during a tour of the Guerdon Enterprises LLC manufactured home plant in Boise in August.

This was the third in a series of manufactured home construction plant tours conducted this summer for utility company representatives throughout the Pacific Northwest.

The event provided an opportunity for utility representatives to learn more about Super Good Cents/Energy Star energy-efficient homes and watch the complete construction process of a manufactured home.

Representatives from Idaho Power Company and Intermountain Gas Company participated in the tour, presented by the region's manufactured home builders and sponsored by the Energy Division, Guerdon Enterprises LLC, and the Northwest Energy Efficiency Alliance.

Guerdon and about 20 other manufactured home builders in the Northwest offer their buyers an energy-efficient option under the industry's regional Northwest Energy Efficient Manufactured Home (NEEM™) Program. These homes provide up to 30 percent energy savings compared to standard built manufactured homes.

Homes are marketed and labeled under the Super Good Cents, Natural Choice and Energy Star brands to the region's homebuyers. SGC homes are heated with electricity and Natural Choice homes are heated with natural gas or propane. Energy Star may be either fuel type.

Under the NEEM program, participating companies in Idaho, Washington and Oregon certify that the homes meet the higher NEEM energy efficiency construction specifications compared to manufactured homes built to under the federally-required Housing and Urban Development (HUD) code energy standards.

During the tour attendees were briefed on the specifications and construction procedures for qualifying homes. Representatives from the Energy Division discussed program requirements and the history of the regional energy conservation program. The briefing included an overview of the marketing and

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Green Tags Offset Renewable Power Generation Costs

By Ken Eklund, Senior Energy Specialist

For only $15 a month, Idaho Power Company customers can purchase "green tags" to help offset the cost of electricity generated by renewable resources.

Green energy is environment-friendly power generated from clean renewable resources, such as wind, solar, geothermal, biomass and hydro. Most traditional power generation relies on burning fossil fuel.

Every time someone replaces existing power with a renewable resource, the electricity pool becomes a little greener, and that benefits everyone.

When customers buy green power from Idaho Power Company, they are actually buying Tradable Renewable Certificates (or green tags) from the Bonneville Environmental Foundation.

BEF is an independent non-profit organization not affiliated with the Bonneville Power Administration. It uses all the proceeds from its green tag sales to finance construction of more wind and solar generators.

For each green tag you buy, you keep carbon dioxide out of the atmosphere. According to Idaho Power, an average customer uses about 1,200 kilowatt-hours per month. If a coal plant generated that much electricity, 1,680 pounds of carbon dioxide would go into the air annually. That's about what two cars produce in a year.

With each monthly $15 green tag, customers are supporting 1,200-kilowatt hours of wind generation that puts no carbon dioxide or other pollutants in the air. It is equivalent to taking those two cars off the road for a year! The cost of helping the environment is only 1.25 cents extra per kilowatt-hour.

Anyone interested in buying green tags should contact their local utility.

Wyoming's Wind Produces Oregon's Green Power

In some places, like Eugene, Oregon, customers can buy green power directly from their utility. Other utilities, such as Idaho Power Company, sell green tags.

The Eugene Water and Electric Board (EWEB) buys wind-generated electricity instead of green tags. It owns 20 percent of the output of the 41-megawatt Foote Creek wind project in Southeast Wyoming.

When an EWEB customer signs up for wind power, they actually buy part of the output from this wind farm. For the EWEB customer using 1,000 kilowatts per hour (kWh) per month, the standard rate is 6.54 cents per kWh. Choosing to buy 10 percent wind brings the rate up to 6.91 cents per kWh, or $3.71 per month.

What's the difference?

A green tag is not electricity. Green tags are the renewable, non-polluting characteristic of electricity generated by a renewable source as certified by a third party organization. Your utility does not have to buy power from the renewable generator to sell you green tags.

At EWEB, customers can buy green power at a firm price. If the price of electricity generated by gas rises because natural gas cost increases, as it did a few years ago, EWEB's green power cost stays the same.

"Some of our customers like the certainty of power pricing that's not subject to fuel cost fluctuation and buy 100 percent green power," says Bob Lorenzen, an energy service representative at EWEB.

Anyone interested in buying green power can contact their local utility to see if it markets green tags or green power. Buying either can help the environment.

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homebuyer benefits of purchasing the "certified" energy-efficient home option.

Doug Pill, sales manager for Guerdon Enterprises, LLC, talked about Guerdon's construction history by providing its customers a quality cost-effective energy-efficient home, and its recent efforts in building modular homes.

Participants were also briefed on the status of incentives paid by more than 60 utility companies in the region to assist and encourage homebuyers to purchase an energy-efficient manufactured home. Utilities promote and support the energy efficiency option to help reduce utility usage and encourage conservation.

A typical homebuyer purchasing the NEEM option adds about $8 to their monthly home mortgage payment, according to Roger Spring, utility programs coordinator with the Alliance. However, that same homebuyer saves about $30 a monthly in energy. Northwest manufactured home buyers have purchased more than 150,000 energy-efficient manufactured homes during the past decade.

Additional site tours were held at the Palm Harbor Homes manufacturing plant in Millersburg, OR; Fleetwood Homes of Washington in Woodland, WA; and Fuqua Homes, Inc., in Bend, OR.

Utility representatives gather outside one of the manufactured homes featured during a tour of Guerdon Enterprises LLC manufactured home plant in Boise. *Photo by Bob Minter*

Mark Your Calendars for Renewable Energy Events

Wind: Stateline Wind Farm tour on Sept. 24
Wind Power Workshop on Sept. 25
Red Lion Inn, Lewiston, Idaho

Solar: PV4You Solar Working Group meeting, Oct. 9
Renewable Energy Fair, Oct. 10
Sun Valley Lodge Limelight Room, Sun Valley, Idaho

For more information, contact Dayna Ball at dmball@idwr.state.id.us or call the Idaho Energy Hotline at 1-800-334-SAVE.

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